Comments of the City of Gloucester

Regarding

EPA DRAFT NPDES Permit No. MA0100625
MassDEP DRAFT Surface Water Discharge Permit
Gloucester Water Pollution Control Facility and CSOs

The City of Gloucester, Massachusetts ("Gloucester" or the "City") submits the following supplemental comments[1] regarding the draft National Pollutant Discharge Elimination System (NPDES) and Massachusetts Clean Waters Act permit ("permit")[2] to discharge wastewater from the Gloucester Water Pollution Control Facility ("WPCF") and combined sewer overflows ("CSOs"). This draft permit was released for public comment with EPA's tentative § 301(h) waiver denial on November 5, 2010.

I. BACKGROUND

Pursuant to § 301(h) of the Clean Water Act, the U.S. Environmental Protection Agency ("EPA"), with concurrence from the Massachusetts Department of Environmental Protection ("Massachusetts DEP"), granted a variance from secondary treatment requirements for Gloucester's WPCF in 1985 and renewed the variance in 2001. Both of these waivers were for the current advanced primary treatment plant, which has a design flow of 7.24 million gallons per day ("MGD") average flow, with a peak hydraulic loading of 15 MGD. The current average monthly flow is 5.08 MGD. The effluent receives chemically enhanced primary treatment and chlorination/dechlorination.

In 1990, with the approval of EPA and Massachusetts DEP, Gloucester relocated the discharge from the existing WPCF to a location in Massachusetts Bay, more than a mile beyond Gloucester Outer Harbor, through an outfall approximately 15,000 feet long. The effluent is discharged through a diffuser on the ocean floor into a water depth of 90 feet. The 2001 waiver reflected the extension of the plant's outfall to its current location.

In 2006, the City submitted an application to EPA Region 1 and Massachusetts DEP for a renewal of its 301(h) variance and its NPDES permit. On November 5, 2010, the EPA Regional Administrator issued a tentative decision denying the variance. At the same time, EPA and Massachusetts DEP issued a draft joint discharge permit for the Gloucester WPCF and five CSOs. The draft permit limits for the WPCF effluent are based on secondary treatment.

On February 4, 2011, Gloucester submitted comments on EPA's tentative denial of the 301(h) waiver. The City believes that this tentative decision is not consistent with Section 301(h) and that EPA should grant the waiver and issue a revised NPDES permit based on advanced primary

[1] The City incorporates by reference its February 4, 2011 comments on EPA's tentative 301(h) waiver decision, including the documents submitted by the City. Also, to the extent any of the comments in this submission are relevant to the 301(h) decision, the City is incorporating them by reference in the February 4, 2011 submittal.

[2] References to the federal Clean Water Act and EPA regulations herein are also meant to apply to the analogous provisions of the Massachusetts Clean Waters Act and Massachusetts DEP regulations.

treatment. Without waiving that argument, the City is now submitting comments on the provisions of the secondary permit in order to preserve its objections to those provisions.

II. GENERAL COMMENTS

As stated in its comments to EPA on February 4, 2011, the City continues to believe that the denial of the 301(h) waiver and requirement to construct a secondary treatment plant is unfounded on the basis of federal law, state law, or environmental protection. The following objections that the City raised in its comments regarding the denial of the 301(h) waiver are also applicable to the proposed secondary permit.

- Benefit-cost Ratio: The benefit-cost ratio of requiring Gloucester to construct a secondary treatment plant is inestimably low. As shown through 20 years of data collected at the outfall location, there will be no measurable benefits from a secondary treatment plant in terms of water quality improvement and the cost will result in user rates for Gloucester customers that would be by far the highest in Massachusetts.

- Regulated Parameter Criteria: There have been no exceedances of numeric or narrative water quality criteria in the vicinity of the Gloucester discharge. Permit limit exceedances have been due to operational issues that have been corrected or are of the minor, sporadic type common in virtually every wastewater treatment plant, regardless of the level of treatment provided. Construction of a secondary plant is not the solution to these occasional issues.

- Sustainability: Construction of a secondary plant in place of the current well-operated advanced primary plant is dramatically contrary to the basic principles of sustainability. A secondary facility produces more greenhouse gases and uses far more energy than a primary plant and results in environmental impacts that are not offset by environmental gains.

- Lack of Environmental Impacts: EPA cited no demonstrated impacts to human, aquatic or other environmental uses of the waters in the area of the discharge. The City has conclusively demonstrated with 20 years of data from the discharge location that there is, in fact, no measurable impact from the discharge. Requiring the construction of a secondary treatment plant will have no meaningful effect on the receiving waters in the area of the discharge.

- Basis for Decision: EPA's decision to require secondary treatment is not founded in sound science and is not consistent with the Clean Water Act or EPA's 301(h) regulations and guidance.

- Financial Impacts: The enormous additional capital and operating cost of secondary treatment will dramatically and negatively impact the ability of the City of Gloucester to sustain its critical infrastructure and its basic social, economic, and environmental quality of life, including its ability to provide basic public services such as public safety and infrastructure.

In addition, early in the implementation of the Clean Water Act, Congress recognized the extreme burden that secondary treatment would impose on communities and, therefore, instituted the wastewater construction grants program that provided 75 percent grant funding for secondary treatment facilities. The construction grants program was abandoned decades ago after communities that did not merit waivers had completed their secondary plants. Consequently, 100 percent of the approximately $60 million cost of a secondary facility in Gloucester would fall on the local rate payers. This unwarranted change in application of law and policy by EPA is unfair financially to the City of Gloucester. If EPA requires secondary treatment, the City requests federal grant funding for the capital costs of the secondary facilities.

Also, the space requirements of secondary treatment in Gloucester will probably require siting of the new facility at a different location in the City. Finding a site in Gloucester that is technically suitable, environmentally appropriate, and publically acceptable would be problematic. Even if a site were physically available, an extended schedule would be required for planning, siting (including performing and publically reviewing environmental impact analyses), acquiring property, permitting, designing, and constructing a new wastewater plant, as well as potentially relocating the major interceptors required to feed it. This would result in costs substantially above the $60 million currently estimated. During this extended period, technology advances in advanced primary treatment, improvements in design and operation of the existing facility, reduction of loads to the plant resulting from completion of on-going CSO, stormwater and IPP initiatives, and additional confirmatory data on the lack of impacts at the outfall will almost certainly continue to underscore the lack of benefit (and in fact, negative impacts) associated with converting to secondary treatment.

Finally, the permit provides no implementation schedule for secondary treatment, despite the acknowledgement in EPA's Fact Sheet that construction of secondary treatment facilities would be a lengthy process. Although the City does not believe it should be required at all, in the event that secondary treatment is imposed, the City will require a significant amount of time to plan, design and construct such a facility. The permit should reflect this.

III. COMMENTS ON DRAFT PERMIT

A. Flow Limit (Fact Sheet pp. 11-2; Draft Permit Part I, A.1. (table and footnote 2))

EPA's draft permit imposes an initial flow limit of 5.15 MGD annual average and requires that a number of conditions be met before the limit can be increased to 7.24 MGD. The key justifications for these requirements and the conditions that EPA imposes are improper and not required by relevant laws or regulations.[3] First, EPA requires that the flow increase be deemed

[3] Although not directly relevant to its determination of the flow limit for the draft secondary permit (but directly relevant to EPA's 301(h) decision), EPA is also wholly incorrect in stating that CWA § 301(h)(8) and 40 CFR § 125.67 required that the facility's flow limit be maintained at 5.15 MGD in the 2001 permit (and, by implication, would require the same limit if the 301(h) waiver were renewed). In fact, the regulatory history of 40 CFR § 125.67 clearly demonstrates that the requirement of "no new or substantially increased discharges of the pollutant to which the modification applies" *only applies over the five-year permit term*. EPA stated in the preamble to the 1979 final 301(h) rule:

> "Section 125.65 [now 125.67] of the final regulations has been changed to allow for reasonable growth through the five-year period of a modified permit. Flows will continue to be limited to the applicant's existing design capacity, where such design capacity provides for normal growth during the life of the modified permit. If an applicant's current design capacity does not provide for normal growth, the applicant must develop a projection of the increased flows necessary to

appropriate by a state anti-degradation review. As an initial matter, neither EPA's antidegradation and anti-backsliding regulations, nor the antidegradation provisions of the Massachusetts Water Quality Standards, require EPA to limit average flow from the WPCF to a level below the design flow of 7.24 MGD. See, *e.g.*, 40 CFR § 122.45(b)(1) ("In the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow."). In any case, EPA has itself already determined that the federal anti-degradation requirements would be met if the permit flow limit were increased to 7.24 MGD. There is no reason to conclude that the state requirements would not also be satisfied during the current permitting process, so this condition is not necessary. Second, EPA requires that Gloucester support the increased permit flow limit with a comprehensive wastewater management plan ("CWMP"), purportedly pursuant to 310 CMR 11.00, the implementing regulations for the Massachusetts Environmental Policy Act. Even assuming that MEPA review would be required to increase the flow limit at the treatment plant to the design flow, there is no requirement in the MEPA regulations for a CWMP. Third, EPA assumes that increasing the flow limit to the design flow will require MEPA review. Because MEPA defines an Expansion in Capacity based on design capacity, MEPA review should not be required at all as long as the design flow is not exceeded. *See* 301 CMR 11.02.

Fourth, EPA states that Gloucester is required to obtain a Massachusetts Ocean Sanctuaries Act variance authorizing the increased discharge, M.G.L. c. 132A § 12A, *et seq.*" (Draft Permit, p. 2 n.2). This is incorrect; no variance is required under MOSA. A Special Act of the General Court made a specific exception for the Gloucester facility:

> Notwithstanding the provisions of sections fourteen, fifteen, sixteen and eighteen of chapter one hundred and thirty-two A of the General Laws, the city of Gloucester may build and discharge from a primary wastewater treatment facility with an extended outfall as described in the application submitted to the administrator of the Environmental Protection Agency of the United States for a waiver of the secondary wastewater treatment requirement as provided by 33 USC 1343.[4]

The application Gloucester had submitted to the Environmental Protection Agency in 1979 described a facility with design average flow of 7.24 MGD and design maximum flow of 15 MGD; the facility was constructed as designed. Thus, the discharge from the Gloucester WPCF is not required to obtain a variance under MOSA.

In addition, the meaning of the second row titled "Flow" in the table in Part I, A.1. of the Draft

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accommodate normal growth over the period of the modified permit…."

In 1982, EPA added § 125.65(c) (now 125.67(c)), explaining the addition as follows:

> "[T]o assure a clear understanding of the requested effluent limits in the context of planned or projected POTW increases, EPA proposes to require applicants to submit data on projected effluent volumes and mass loadings in five year increments over the design life of the facility (proposed § 125.65(c))."

It would be nonsensical for EPA to request information on projected future effluent volumes and mass loadings if the same regulatory section prohibited any future increases. Thus, 40 CFR § 125.67(a) clearly only prohibits increases *during a given permit term*.

[4] Chapter 120 of the Acts of 1981 (May 1, 1981).

Permit is unclear and should be clarified or deleted.

B. Biological Oxygen Demand and Total Suspended Solids Limits (Fact Sheet pp. 14-15; Draft Permit Part I, A.1. (table and footnote 4))

The limits in the draft permit for biological oxygen demand and total suspended solids fail to take into account the effect of Gloucester's combined sewer system. First, the average weekly mass limit eliminates the flexibility afforded by the average weekly concentration limit during high flow events. It must be recognized that during high flow weeks, flows in excess of 7.24 MGD will be processed. A weekly average for mass loading is impracticable during these times; therefore, pursuant to 40 CFR § 122.45(d), weekly limits should not be imposed. Second, percentage removal requirements should be set according to the provisions of 40 CFR § 133.103, which addresses secondary treatment in combined sewer systems during wet weather: "the decision must be made on a case-by-case basis as to whether any attainable percentage removal level can be defined, and if so, what the level should be." At a minimum, the 85% removal requirement is unattainable and not required under § 133.103; the removal requirement should be set at a more realistic level, which should be determined on the basis of actual performance data from periods of wet weather flows at the plant.

C. Water-Quality Based Effluent Limits

Under the Clean Water Act and EPA regulations, EPA must ensure that permit effluent limits will achieve water quality standards for all pollutants which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard…." 40 CFR § 122.44(d)(1)(i). EPA's regulations and guidance provide clear instructions as to how water quality standards should be translated into permit effluent limits. EPA did not follow these regulations and guidance in development of water-quality based effluent limits for the Draft Permit.

1. ***Oil and Grease (O&G) Limit*** (Fact Sheet pp. 12-14; Draft Permit Part I, A.1. (table and footnote 8))

   EPA's determination of a 0.0 mg/l effluent limit for oil and grease (O&G) is wholly unjustified and unreasonable. First, EPA is wrong to say that the Massachusetts water quality standard for oil and grease in SA waters is, essentially, zero. EPA provides no justification for interpreting the Massachusetts narrative water quality standard for oil and grease for SA waters ("free from oil and grease") as requiring that "there shall be no measurable oil and grease present in the receiving waters." First, EPA has already determined with regard to other NPDES permits discharging into marine SA waters that the Massachusetts water quality standard does not mandate essentially non-detectable levels of oil and grease in the receiving waters. *See, e.g.*, the fact sheet for the 2008 South Essex Wastewater Treatment Facility draft permit (recognizing that allowing 15 mg/l of oil and grease in the discharge "meets the narrative 'free from oil and grease and petrochemicals' in the SA criteria"). Moreover, if analytical methods for oil and grease became advanced enough, this interpretation would result in numerical limits for oil and grease being set lower than limits for some highly toxic chemicals. This is an arbitrary

interpretation of the narrative standard. Moreover, EPA's interpretation of the narrative standard does not comport with any of the options specified by 40 CFR § 122.44(d)(1)(vi) for translation of narrative to numeric standards, which provides several methods for establishing numeric standards, including (1) calculating the numeric criteria using a proposed state criterion or a state policy or regulation, (2) using EPA's water quality criteria published under § 304(a) of the Clean Water Act, or (3) using an indicator parameter.[5] Instead, EPA arbitrarily interprets the standard to be zero, with compliance measured at the current method detection limit.

Second, even if it were correct that the Massachusetts water quality standard for oil and grease were zero, EPA would be wrong to translate that standard into a "zero discharge" effluent limit. EPA states in the fact sheet for the draft WPCF permit that "the treatment plant discharge contains measurable quantities of oil and grease and, therefore has the reasonable potential to exceed the 'free from oil and grease and petrochemicals' criterion." This is inconsistent with the position EPA took in the fact sheet for the South Essex Wastewater Treatment Facility 2008 draft permit, in which it specifically recognized that a 15 mg/l effluent limit would satisfy the "free from oil and grease" standards. In addition, EPA's regulations at 40 CFR § 122.44(d)(1) and EPA's key guidance on water-quality-based effluent limits[6] clearly require that dilution of the effluent in the receiving water be taken into account in the determination of "reasonable potential to cause, or contribute to an excursion above any State water quality standard." Based on the initial dilution of 65:1 posited by EPA in the Gloucester fact sheet, even the current effluent concentration of 25 mg/l will result in an ambient concentration of 0.38 mg/l at the edge of the mixing zone allowed by Massachusetts' water quality standards. This is an order of magnitude below the detection limit for O&G and TPH. Thus, the effluent limitation of 25 mg/l in the current permit for the WPCF is appropriate and even conservative based on the initial dilution. Because the current discharge consistently meets this limitation, there is no basis to conclude that the effluent will result in any violations of the criterion at the edge of the mixing zone.

Further, compliance with the Massachusetts water quality standards in the receiving waters has been well demonstrated. For the first 12 years of Gloucester's 301(h) monitoring program, levels of oil and grease were measured in the receiving waters. Samples were taken from surface and bottom waters at four stations around the diffuser and at two control sites. In spite of commercial and recreational boat traffic through the

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[5] 40 CFR § 122.44(d)(1)(vi) provides: "Where a State has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits using one or more of the following options: (A) Establish effluent limits using a calculated numeric water quality criterion for the pollutant which the permitting authority demonstrates will attain and maintain applicable narrative water quality criteria and will fully protect the designated use. Such a criterion may be derived using a proposed State criterion, or an explicit State policy or regulation interpreting its narrative water quality criterion, supplemented with other relevant information which may include: EPA's Water Quality Standards Handbook, October 1983, risk assessment data, exposure data, information about the pollutant from the Food and Drug Administration, and current EPA criteria documents; or (B) Establish effluent limits on a case-by-case basis, using EPA's water quality criteria, published under section 304(a) of the CWA, supplemented where necessary by other relevant information; or (C) Establish effluent limitations on an indicator parameter for the pollutant of concern …."

[6] See *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001 (March 1991); *NPDES Permit Writers' Manual*, EPA/833/K-10-001 (September 2010).

area, positive detects were exceedingly rare.[7] As a result, EPA has not required sampling for oil and grease in the waters around the outfall since 2002.

Finally, the City is unaware of any permits for Massachusetts POTWs discharging to SA waters for which the O&G limit is set at the level EPA says is required. Below are some examples from the EPA Region 1 website of permits for POTWs discharging to SA waters. None of these even have an O&G limit, much less a 0 mg/l requirement.

- Cohasset Wastewater Treatment Plant (NPDES Permit MA0100285, 7/18/2007): No O&G limit or monitoring requirement.
- Rockport Wastewater Treatment Plant (Draft NPDES Permit MA0100145, public notice date 5/20/2009): No O&G limit or monitoring requirement.
- South Essex Wastewater Treatment Facility (NPDES Permit MA0100501):
  - Permit dated 2/9/2001: O&G monitoring/reporting requirement only.
  - Draft permit (2008): No O&G limit or monitoring requirement.
- Dartmouth Water Pollution Control Facility (NPDES Permit MA0101605, 6/19/2009): No O&G limit or monitoring requirement.

There no basis to conclude that O&G from the WPCF discharge has a "reasonable potential to cause, or contribute to an excursion above any State water quality standard," and certainly no basis to impose an effluent limitation which is far lower than necessary to meet water quality standards and which has not been applied to other WCPFs discharging to marine SA waters. The O&G limit should remain at 25 mg/l.

2. ***Total Petroleum Hydrocarbons (TPH) Limit*** (Fact Sheet pp. 12-14; Draft Permit Part I, A.1. (table and footnote 8))

EPA's translation of the "free from…petrochemicals" water quality standard into a 0.0 mg/l permit limit for TPH suffers from the same flaws as the oil and grease limit: "free from" does not translate to "no measurable," and the 65:1 dilution should be taken into account in calculating effluent limits based on water quality standards.

The fact that the existing TPH standard is appropriately protective has also been demonstrated in the results of sediment sampling in the vicinity of the outfall reported annually since 1991. Priority pollutants scans for volatile and semi-volatile organics were originally performed on samples from both the water column and sediments. Water column sampling was discontinued in 1991 due to the failure to detect any of these compounds. Sediment sampling has continued for the last 20 years at sites ranging from 30 meters to 1500 meters from the diffuser. Only a few pyrogenic semi-volatile hydrocarbons have been detected and these were at very low levels (parts per billion) typical of background levels for Massachusetts Bay. The sampling site nearest the outfall usually has the lowest concentrations of these compounds. There have been no indications of increases in the concentrations of any of these materials in the 20-year time

[7] In 2000 and 2001 there were no detects for oil and grease in more than 500 samples.

period. The sources are most likely atmospheric deposition, runoff and boat traffic. There is simply no basis to conclude that TPH from the WPCF discharge has a "reasonable potential to cause, or contribute to an excursion above any State water quality standard." The TPH standard should remain at 5 mg/l.

3. ***Bacteria Limits*** (Fact Sheet pp. 15-17; Draft Permit Part I, A.1. (table and footnotes 1 and 6))

In setting bacteria effluent limits, EPA once again fails to take dilution into account. EPA justifies its approach by making the following assertions (fact sheet pp. 15-16):

- "Historically, MassDEP has required that bacteria limits be applied 'end-of-pipe' (i.e., at the point of discharge) with no allowance for dilution."
- The MassDEP Implementation Policy for Mixing Zones requires a demonstration that the mixing zone at the WPCF discharge does not encompass important shellfish areas, which has not been made.
- A 2008 internal EPA memo regarding zones of dilution for bacteria in rivers and streams should be relied on to prohibit a mixing zone for bacteria at the WPCF discharge.

None of these justifications is supportable. EPA cites no reference for its claim that MassDEP requires that bacteria limits be applied without dilution factors. There is no such statement in the Massachusetts Water Quality Standards, the MassDEP Implementation Policy for Mixing Zones, the MassDEP Surface Water Discharge Permit Program regulations, or any other MassDEP water quality regulatory or guidance document that the City is aware of.

Also, the years of biological monitoring in the vicinity of the outfall, documented in the City's annual 301(h) reports to EPA, make it clear that there is no potential for shellfishing in the area of the outfall, much less "important shellfish areas." There are only two species found in the area of the discharge that could be considered potential resource species. These are the soft-shell clam, *Mya arenaria,* and the ocean quahog, *Arctica islandica*. Both of these species are typically found in "beds" where high densities make it feasible to collect enough individuals to make the effort worthwhile. However, *Mya arenaria* beds are found in intertidal areas and ocean quahog beds in sandier sediments offshore, not in the vicinity of the Gloucester outfall. Small numbers of juveniles of both these species have been reported in benthic grab samples in the monitoring program, but fewer than 10 adult individuals of *Arctica islandica* and no adult specimens of *Mya arenaria* were collected in more than 1000 benthic grab samples taken over 20 years. Further, there is not presently a commercial or recreational market for *Arctica islandica* in Massachusetts. Finally, the entire area around the WPCF discharge, and up and down the coast in the vicinity, is classified as "Prohibited" by the Massachusetts Division of Marine Fisheries under the National Shellfish Sanitation Program. The WPCF outfall is considered a point source under that program; thus, extensive water quality sampling would be required to open the area to shellfishing (regardless of the level of treatment provided by the WPCF). That sampling is unlikely

to take place due to the lack of shellfish habitat; further, the Massachusetts DMF typically prefers to maintain a buffer "Prohibited" around all point sources in case of plant failures.[8]

Finally, the 2008 memorandum EPA cites is inapplicable. The memorandum is not found on EPA's list of water quality standards policy and guidance documents,[9] and it contradicts statements in EPA's formal guidance. The preamble to EPA's regulation promulgating water quality criteria for bacteria for coastal recreation waters responds to comments on mixing zones for bacteria as follows:

> EPA appreciates the concerns of commenters regarding human health risks of exposure to fecal contamination within mixing zones. However, EPA has determined that the Agency's existing guidance provides sufficient direction to permitting authorities as they implement State or Territorial mixing zone policies. EPA's *Water Quality Standards Handbook: Second Edition* (EPA–823–B–94–005a, August 1994) as well as EPA's *Technical Support Document for Water Quality Based Toxics Control* (EPA–505–2–90–001, March 1991) advise against the use of mixing zones where the location may pose a significant health risk. These documents stress the importance of determining the appropriate placement and size of mixing zones depending on the potential effects to human health and the environment. As a result, **EPA is not prohibiting the application of mixing zones in the final rule in cases where they would be allowed under existing State and Territorial programs**.[10]

EPA's Water Quality Standards Handbook states, "For protection of human health, the presence of mixing zones should not result in significant health risks using **reasonable assumptions** about exposure pathways" (emphasis added).[11] It is not reasonable to assume that people will be recreating in the mixing zone for the WPCF discharge, which is below the water's surface, in deep water, well offshore and well away from diving sites. Finally, even if the 2008 memorandum cited in the fact sheet did represent official EPA guidance, its discussion of potential exposures in "…rivers and streams…" would have no relevance for the WPCF discharge.

4. ***Whole Effluent Toxicity (WET) Limits*** (Fact Sheet pp. 18-20 and Draft Permit Part I, A.1. (table and footnotes 9, 10 and 11))

The WET limits in the draft permit are inappropriate because exceedance of the limits does not indicate any actual toxicity in the vicinity of the WPCF outfall. In the fact sheet, EPA acknowledges that testing of the WPCF effluent "demonstrates an absence of

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[8] Based on discussions with the Gloucester Shellfish Constable.

[9] http://water.epa.gov/scitech/swguidance/waterquality/standards/library_index.cfm (last visited March 12, 2011).

[10] Environmental Protection Agency, 40 CFR Part 131: Water Quality Standards for Coastal and Great Lakes Recreation Waters; Final Rule. 69 Fed. Reg. 67128, 67229 (November 16, 2004) (emphasis added).

[11] *Water Quality Standards Handbook: Second Edition* (EPA–823–B–94–005a, August 1994) at 5-7.

reasonable potential for the priority pollutants to cause or contribute to an exceedance of state water quality criteria" (p. 18). EPA also acknowledges that "biological and receiving water quality monitoring data does not indicate any significant changes to the biota outside the zone of initial dilution" (p. 18). In other words, there has been no toxicity seen at the outfall, and no pollutants have been detected in the effluent at levels that could cause toxicity. Nonetheless, EPA states that WET testing is required to "reveal the additive, antagonistic, and/or synergistic effects of combining various pollutants" and to "reveal the presence of previously unidentified pollutants" (p. 19). This requirement has no rational basis, given that chemical and biological sampling show no evidence of toxicity

In addition, the results of WET testing of the WPCF effluent are almost certainly an artifact of test conditions not present at the outfall. The laboratory toxicity tests are conducted at either 20 or 25 degrees Celsius, but the temperature at the outfall never approaches these temperatures. The diffuser releases the effluent at 30 meters depth in Massachusetts Bay where the maximum summer temperature is 10 – 11 degrees C. For most of the year the temperature is well below 10^{o} C. A toxicity identification evaluation (TIE) study conducted on the WPCF effluent identified ammonia as the likely primary cause of toxicity.[12] The percentage of un-ionized ammonia, *i.e.* the fraction toxic to marine organisms, is greatly affected by pH and temperature. Higher temperature and pH increases the amount of unionized ammonia. At a pH of 8 and salinity of 32 ppt (approximate conditions at the outfall), the percentage of un-ionized ammonia changes from 1.44% at 10^{o}C degrees to 2.98% at 20^{o} C and 4.28% at 25^{o} C.[13] Clearly, the temperature of the seawater during the laboratory tests has a dramatic effect on results, essentially doubling or tripling the toxicity of the ammonia component; the pH and salinity of the test also tend to increase toxicity compared to conditions at the outfall.

EPA's guidance on developing water-quality based effluent limits specifically cautions against misinterpretation of test results in this scenario:

> There may be a few unusual situations where the pH, temperature, hardness, salinity, and solids requirements of the testing procedures differ greatly from the worst environmental conditions for these parameters. In these situations, the effluent toxicity tests may either over or under predict the toxicity in the ambient receiving water. An example of this is where ammonia is present and the highest expected ambient water temperature is 20^{o} C whereas the chronic toxicity test must be conducted at 25^{o} C. Since a higher temperature causes more ammonia toxicity, the temperature requirements of the test may induce toxicity not found in the ambient water. In such an instance, the regulatory authority must look carefully at the test protocols and all the data collected to determine if the facility is actually contributing to toxicity in the receiving water. A toxicity identification evaluation may be necessary to make this determination. If this analysis shows a toxicity test

[12] Brown and Caldwell, 2007. Draft Phase II Voluntary Toxicity Identification Evaluation. Prepared for the City of Gloucester.

[13] European Inland Fisheries Advisory Commission, 1986. Report of the working group on terminology, format and units of measurement as related to flow-through and recirculation system. Tech. Pa. 49.

result to be artificial due to environmental parameters, that that test should be overridden by subsequent valid toxicity tests conducted.[14]

For the WPCF permit, the toxicity test conditions should be modified to reflect conditions at the outfall, or the requirement should be eliminated altogether. The City requests that the WET limits be replaced by a Compliance Plan focused on developing alternative, EPA-approved test methods to avoid the continual reporting of meaningless false positive results. This compliance plan would also reevaluate the frequency of sampling to be required. Additionally, the WET limit should reference that compliance will be assessed under the conditions of a mixing zone established in accordance with state standards and guidance.

D. Comments on Specific Provisions of the Draft Permit

1. PART I, A.1. Footnotes: The City requests that a clear statement be included in the permit concerning the applicability of the state and federal provisions for use of a "mixing zone" or "zone of initial dilution" in determining compliance with permit requirements and water quality standards.

2. PART I, A.1.6. The number of samples needed to calculate the geometric mean should be specified, as should the time interval between the individual samples.

3. PART I, A.1.11.d. As this pertains to a narrative criterion for which no approved, quantitative analytical methods apply, the City requests that the requirement be restated as, "The effluent shall not contain visible oil, foam, or floating solids at any time."

4. PART I, A.1.11.e. During wet months and seasons, the WPCF will likely be unable to meet the requirement for 85 percent removal of TSS and BOD based on monthly average values. Pursuant to 40 CFR 133, the City requests a waiver from the 85 percent removal requirement during wet months and seasons and requests that this waiver be formally established in the permit.

5. PART I, A.1.11.g. It is unclear how the requirement that "The permittee shall minimize the use of chlorine while maintaining adequate bacterial control." is to be interpreted in light of the proposed total residual chlorine limit. Is this "minimization" a separate requirement from the TRC? The City requests clarification of how TRC is to be measured and what limit will be used to determine compliance with permit conditions.

6. PART I, A.3. It should be made clear that the terms "pass through" and "interference" have the meanings defined in 40 CFR § 403.3.

7. PART I, B.2. Given that even secondary treatment cannot meet the 0.0 mg/l requirement in the draft permit, the local limits for oil and grease required to meet that limit would be unattainable by local businesses. The City requests that the determination of the need for completion of a Maximum Allowable Headworks Loading Analysis for Oil and Grease

[14] EPA, *Technical Support Document for Water Quality Based Toxics Control* (EPA–505–2–90–001, March 1991), at 24-25.

be included in the technical evaluation to be done under PART I, B.1 and that PART I, B.2. be stricken.

8. Attachment B. There are several references to the Northampton Wastewater Treatment Plant that appear to be unintended and should be removed from the proposed permit.